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THE approach of the season when the various Chapters of the American Institute of Architects begin for the winter their regular monthly meetings, warns us to note the fact, made more obvious by recent events and investigations, that if true to their trusts, they have an abundance of very serious work laid out for them. If they appreciate their responsibilities they will have no reason to complain of want of business. We fear that the reports of the Chapters at the forthcoming convention will, as heretofore, appear mostly as perfunctory documents, setting forth in many cases an unproductive routine of stated meetings during the past year, and bearing upon their face evidence of the difficulties of obtaining quorums, or, if obtained, of arousing an active interest among the members. Our columns have too rarely contained reports of the proceedings at these meetings, or of papers read and discussions held at them on subjects of professional or public interest. The first business of the Chapters would seem to be to take vigorous measures to multiply the number of their members, so that their wheels may not be so often blocked by the impediment of "no quorum." To this end we believe that the convention will show an increasing disposition to smooth the way by so adjusting the matter of costs and dues, that this alleged obstruction to membership may be rendered of less effect. We shall be interested to learn the result of the experiment in the reduction of annual fees, as voted at the last convention. The business for each meeting for the season should be carefully laid out by a committee of the most active and intelligent members, so that each senior and junior member may feel that he is to bear some stated part in the winter's work. Experience has shown clearly enough in all associations combined for mutual improvement, that their business will not take care of itself, and, if not regularly provided beforehand, the proceedings will be very sure to degenerate into mere *conversaziones*, doubtless very agreeable in themselves, and not without influence in promoting a necessary and wholesome feeling of good fellowship; but in these social pleasures, the grave responsibilities of our position as professional men organized for active service in the midst of a society which needs our best combined services, are apt to be overlooked. It cannot be doubted that the Institute, admitting all that it has accomplished, has not fully availed itself of its opportunities. These are many and various, but perhaps the most obvious among them may be enumerated as follows: to encourage a more intimate relation between art and the various industries which are employed by architects in their works; to promote a spirit of discussion, criticism, and analysis among themselves; to give greater efficiency and wider scope to the building laws, especially in view of the constant admonition to change in them given by fire and fall; to improve the dwellings of the working classes; and in short to so order their proceedings that architects may be encouraged to feel that the work they are engaged in is not a mechanical occupation, or a mere business, but an art which is the direct agent of civilization, and which not only maintains but elevates and refines those who pursue it.

THE fall of a house at Cincinnati by the undermining of its walls in the excavations for the construction of an adjoining building, and the great fire of the 3d inst. in New York, on Thirty-fifth and Thirty-sixth Streets, by both of which disasters many lives and much property were needlessly sacrificed, are fair examples of that succession of tragedies which will continue in the future as they have continued in the past, at irregular intervals, so long as our building laws remain unimproved and the execution of them is intrusted to the discretion of politicians. In the former case, the coroner's jury has brought in this remarkable verdict:—

"The deceased came to their deaths from injuries received from the fall of a building at No. 74 Longworth Street, and we further find that the result of said accident was due to bad material used in the construction of said building."

This is a conclusion obviously insufficient. It is true "crowner's quest law," and carries with it no beneficial or remedial results. As regards the New York disaster, we believe that the jury has not yet brought in its verdict, and, in the absence of complete testimony, we are not prepared to point an appropriate moral with regard to it. But it is evident that these verdicts are rarely comprehensive enough to bear their proper fruitage. It is, however, competent for architects to draw large and instructive conclusions from every such disaster. It is for them to improve the opportunity, and while the accident is fresh in the minds of the public, to urge such necessary amendments to the statute, and to the execution thereof, as shall secure immunity in one direction at least. These amendments, as they accumulate, must carry with them the spirit of reform in all our methods of building. Thus the control of this spirit must rest with the associated architects if they are duly vigilant, courageous, and intelligent. It should never be forgotten that these accidents by conflagration and fall are the opportunities of good architecture.

IN the last number of this journal (p. 286) we summarized a portion of the new Government Building Code, prepared under the advice of the Royal Institute of British Architects, for the use of the sanitary authorities in the various towns throughout England. The portions to which we referred included regulations concerning streets, walls, foundations, roofs and chimneys. Our contemporary the *Architect*, of Aug. 25, contains an abstract of the remainder of these important regulations. They require a clear distance of at least 24 feet between the frontage of opposite dwelling-houses, and in the rear of each house an open space of not less than 150 square feet; the lateral boundaries of the lot to be from 10 to 25 feet from the building, the distance increasing with the height of the building. They require windows on all sides for ventilation, one or more for every habitable room, having an aggregate glass area at least equal to one-tenth of the floor area, and each window arranged so as to be opened at top one-half its own area. They also require a ventilated space of three inches between wood floor-beams and concrete in basements; and every habitable room without a fireplace and flue is to have ventilation by an air-shaft of at least 100 square inches. It provides for the subsoil drainage of damp sites separate from the house drainage; house drains to be not less than 4 inches internal diameter, with water-tight joints, to be laid in concrete beds and (if it can be avoided) not under buildings; to have regular fall, straight direction, branches entering obliquely, and the whole trapped near the sewer or cesspool with which they communicate; every such drain to be ventilated at two points as far apart as possible, one by a pipe opening at surface of ground and the other by a pipe opening at least 10 feet above the surface, one of these pipes to be near the trap aforesaid, and all the ventilating pipes to be at least equal to the area of the drain with which they are connected. Soil-pipes are required to be at least 4 inches in diameter, to be fixed outside the building, to be carried up without bend, to be open at top, and to have no trap, except in immediate connection with the connecting water-closets. Waste-pipes from kitchen sinks to be trapped and to connect with drains; other waste-pipes to be taken through external walls, and "discharged in the open air over a channel leading to a trapped gully-grating at least 18 inches distant." Water-closets are to be against external walls, to

have windows and other ventilating appliances, to have separate cisterns arranged for flushing the pans, and no "D" traps. Privies to be at least six feet from dwelling-houses, to be ventilated near the top, to have paved floors inclining towards doors, to have no connection with drains, to be arranged so that vaults or receptacles may be readily cleaned, and fitted to receive dry earth or ashes. The regulations are explicit as regards the construction of ash-pits or places for the deposit of dry household refuse. Cesspools are to be kept at a certain distance from the house, to have no connection with sewers, to be easily accessible, to be built of masonry in cement, and ventilated. It will be observed that these regulations, so far as they are concerned with the sanitation of dwellings, are similar to those of Denton, described more at length in our fourth article on Sanitary Engineering (p. 288).

WE again heartily commend these By-Laws or regulations for building to the attention of all interested in sanitary matters. They are the product of a high state of civilization. No people can claim to have reached the standard of true well-being until they shall have submitted their households to well-considered sanitary rules, after the manner of those provided by the English Government for the instruction of their local sanitary boards. Free schools, free libraries, free churches, and the right to vote, — these we have, together with all the requisites of civilization which the possession of these institutions implies; but until our houses are made safe and wholesome, we are not fitted to receive all the blessings of intellectual, moral, and political freedom. We have building laws for our great cities, — all more or less imperfect, — but all under the pressure of the great public admonitions of fire and disease, gradually taking shape, so as to procure for us the ordinary conditions of security. But in the smaller towns and villages, as we have taken occasion to observe, these conditions are almost wholly neglected. It will be observed that the English rules are simply model by-laws, for building and drainage, recommended for the acceptance of the local authorities. When such information is promulgated, at least the excuse of ignorance is removed, and boards of health, selectmen, and supervisors, are furnished with an incentive for action, and with a basis of sound regulations. For application to our own necessities, the scheme seems to be practicable and moderate. With this object, we venture once more to recommend the Chapters of the Institute to take up this interesting question at their meetings next winter, referring them to the excellent abstract of the English code contained in the numbers of the English *Architect* for Aug. 18 and 25. We need hardly say that our columns will always be open to discussions of this subject.

WE now learn that the Trustees of the Institute, in asking the various Chapters for an expression of opinion regarding their Resolutions on the Washington Monument question, did not intend, as we were informed by the abstract from the minutes with which we were furnished, to act upon such expressions at their meeting of Sept. 6, but to lay them before the approaching convention for final action. These resolutions, it will be remembered (see p. 285), proposed a public competition in which various exceptional concessions were made not contemplated in any expression of opinion on the subject of competitions yet made public by the Institute. They are in conflict with the best interests of all parties, the public and the competitors alike, and, if finally adopted, will be full of danger to the profession. But we have no fear of any such result, and we do not believe they would have been proposed for the consideration of the Chapters, if the Board had realized that, in allowing a liberal and good-natured concession for the sake of satisfying a temporary interest, they were making a sacrifice of vital principles which should be permanent and which should be maintained with dignity. We beg leave to refer the Board to the fifth chapter of the Tract on Competitions, reported to the Institute by the Committee on Professional Practice at the Ninth Convention, and published with the Proceedings of the Tenth Convention. This Tract has been printed separately by the Institute, and should be sent to every committee which has it in contemplation to invite a competition of architectural designs. It covers the ground in the interests of all parties more thoroughly than any other paper or treatise within our knowledge; and it contains an expression of principles which should not be abandoned by architects, much less by the Institute of Architects, save under the most exceptional conditions.

THE Boston *Daily Advertiser* of the 3d and 4th inst. contains a remarkable letter addressed to Stephen Salisbury, jun., Esq., of Worcester, from Dr. Augustus Le Plongeon, concerning the archæological researches in which he has for a long time been engaged among the ruins of Yucatan. The ancient city of Chichen-Itza, to which he especially refers, contains, it appears, among its vast architectural remains many very curious carvings and inscriptions which seem to offer to the student new clews to the solution of the strange resemblances in manners, religion, arts, and language between the prehistoric tribes which dwelt in these mysterious regions at least 6,000 years ago, and the ancient inhabitants of Europe and Asia. Dr. Le Plongeon, however, develops one point of peculiar interest indicating perhaps that this people anticipated in those dark ages an invention which is the proudest boast of our own. He was led to this discovery by the statement of a very aged Indian who, repeating to him some of the traditions concerning the place, called to mind the story of a certain inscription upon a certain house in the ruined city, which set forth that "a day would come when the inhabitants of Saci (Valladolid) would converse with those of Ho (Merida) by means of a cord that would be stretched by people not belonging to the country." Some months later, on searching among the remains of the city, he found a building, realizing the description contained in the narrative, with eighteen rooms, and over the doorway of one of these rooms a lintel stone on which appeared inscribed a cord connecting the mouth of a face in the right-hand upper corner of the slab with the ear of another face carved on the opposite corner; the upper face representing the people of Saci, and the lower face the people of Ho, who dwelt in lower places on the plains. Near the upper station four zigzag lines converged on a common centre, and the middle of the cord itself was broken by a similar conventional sign of lightning. The natural inference drawn by our antiquary was of course that the electric telegraph was known to the Itza sages 5,000 or 10,000 years ago; and that this slab will prove to be a new Rosetta stone giving at last a definite clew to the deciphering of the inscriptions in the ancient Maya tongue, which is still spoken by the Indians of Yucatan.

IT is the aim of this journal, in preparing and arranging the illustrations for each number, to present not only a continuous and varying record of the best available architectural works in this country, but also, for the sake of contrast, and because of the instruction and incitement which they may afford, the more unusual architectural productions of the Old World, whether of ancient or modern times. In realizing this policy the most serious obstacles which we encounter as regards the former class are the occasional indifference or unwillingness shown by architects who are engaged upon important works, when requested to submit their drawings for publication, and the difficulty of selecting from among the many sketches and studies which are sent to us, without giving serious offence to those whose drawings for various reasons we are constrained to return. These rejections are frequently made because the drawings come to us in such shape and condition that, should we attempt to reproduce them without fundamental and costly changes in their style and handling as works of draughtsmanship, we should be doing injustice to their claims as works of art; and frequently because they present a character of design which we have so often repeated in our pages that we are compelled to set them aside in favor of others whose originality will give a larger scope and a more interesting variety to our record of the current events of architecture. But it occasionally happens that when a work of conspicuous merit has been built, we are unable to obtain an authentic drawing of it; and our record must remain to that extent incomplete. We are not disposed to analyze the motives of those who thus withhold their assistance, except so far as these motives may be induced by a distrust or dislike of that mechanical process of reproduction to which we are confined. We admit that there has been no little reason for dissatisfaction in this respect in

the past; but we must beg our friends to acknowledge in their turn that our pages have of late indicated a conspicuous advance in the quality of this work, especially in those cases wherein the character of the drawing has been such as to lend itself readily to the processes. For want of time to prepare a substitute, we are occasionally at the last moment compelled to print a drawing which promised well but turned out ill; but on the whole, through a system of careful rejection on our part, and greater care and attention in preparing and printing the plates, we think we may now compare favorably, in respect to the clearness and finish of our illustrations, with our older and more experienced contemporaries in England. What can be accomplished by careful handling, may be best marked perhaps by the reproduction of the delicate steel engraving of the grand staircase of the new Opera House at Paris in the present number, which we request our doubting friends to examine with a critical eye, and no longer hold back from us that assistance which we need in the successful fulfilment of our mission.

CORRESPONDENCE.

THE NEW STATE CAPITOL AT HARTFORD. — INEBRIATE ASYLUM. — MONUMENT.

HARTFORD, CONN., Sept. 3, 1877.

IF the appearance of the new State Capitol now building in this city is unknown to anybody in Connecticut, he has but himself to blame. What with the arts of lithography, photography, and engraving, coupled with the generosity of the architect and commissioners, the distribution of the view which represents the building in its entirety has been universal; and the edifice has been built in the minds of the people throughout the land. The people can thus see what they are paying for, which certainly is a good thing; but as an art educator it is next to possible that they might do better. Comparisons are "oderous" as Mrs. Malaprop says; and yet upon seeing the present Capitol, one cannot help turning back a page or two in the history of the State project, to the time when the first architectural competition for the building took place. This was in 1872; when in response to the invitation of the commissioners for plans whose execution should not exceed $900,000, a number of designs were sent in. Boston and New York were represented as well as Hartford, and one set of drawings on their way to this city from California was snow-bound in the Rocky Mountains. Probably at no previous time did the city press blossom out so fully with art criticism as during the public exhibition of these works. The papers fairly teemed with architectural articles calculated to "educate the people" up to a proper consideration of the manifold beauties of one design, or to point out the unpardonable faults and gross absurdities of another; but above all there was to be no useless expenditure on the part of the State, and the sum mentioned was to be the strict limit for the cost of the Capitol. A second competition was instituted. A great amount of skill in planning, of thought and study in arrangement, and clever work in design, marked the efforts of both these competitions. At the second and as it proved the final one, eleven sets of drawings were exhibited, Gothic being the prevailing style of the work. This exhibition took place in March, 1872, at which time the appropriateness of Gothic for public buildings was discussed at great length in the city papers. Upon the commission were no members conspicuous for their architectural knowledge, with perhaps one exception; and beyond the decision of the board there was no appeal. The pros and cons of the various designs were considered at length, and the usual hearing given the architects, after which the award was made: it was not conclusive however until material changes were effected in the design of R. M. Upjohn of New York. We hear of important decisions hanging by a single thread. This one hung by a dome. The journalistic debates on this feature were something remarkable; and as the discussion rose higher and higher, the tower which originally crowned the building fell lower and lower in public estimation. Tradition — American tradition — pointed to a dome. State Houses always had domes, the new State House at Hartford must have a dome. This was about the pith of the reasoning: consequently a dome was ordered, and will be built, despite the fact that the prime mover in bringing about the change is now dead, a noted clergyman whose good offices are, as a gentleman of the city recently told the writer, "more than counterbalanced by causing the Capitol to be built with a dome." This may be taken with some qualification, as an index to the feeling of a portion of citizens on this subject.

The Capitol is designed in what the architect calls "modern secular Gothic." It is two and a half stories high, and has a frontage of nearly 300 feet upon the City Park, the building standing upon the grounds lately purchased from Trinity College. The recent removal of one of the college blocks opens up from the street below a fine view of the eastern side of the Capitol, which is perhaps the most effective point from which to behold it. The general ground plan is in the form of a parallelogram whose lines are chiefly broken by the projection of the main central portion, whose total length is about 200 feet; the park façade being treated with an arcade through which is the principal entrance, and the south projection embracing a *porte-cochère* and ample vestibule, above which is located the Representatives' Hall. On the same story, — a mezzanine story — in the eastern wing, is the Senate Chamber. The Supreme Court room and the State Library are upon the first story, or what is commonly styled the second floor, the library having an excellent north light. The court-room is situated in the extreme west wing. The customary office for the State authorities, the Governor's suite of apartments, and the various rooms for commissioners, etc., occupy for the most part, the main wings, and are conveniently located for the various purposes for which they are intended. Two large skylights admit light into the corridors in the intermediate portion of the wings, between the main building and their extremities. The extremities of these wings have their length at right angles to the adjoining portion, and are externally treated with gables, flanked by circular turrets and pierced with a wheel window, the composition being a vague suggestion of certain public buildings recently erected near London. The various roofs of the building are generally constructed with a high pitch, and the dormers with which their lines are broken present a dull monotony of design. There is no lack of corner towers. These rise from the main building, and are finished in a nearly uniform style, the roofs being of pyramidal shape, with terminals of copper and iron.

When this design for the Capitol at Hartford was placed on exhibition in New York, some time ago, it fell under the eye of a critic who smartly suggested that the architect "had dined on Gothic, with an *entrée* or two of French châteaux and a dessert of Renaissance, and had then gone to bed and dreamed this horrible nightmare!" Whatever may have been the case, and whatever the source which suggested this composition, while undoubtedly it has merit in some respects, still one great defect in the design is conspicuous and will remain so despite dreams, present, past, or future. We refer to the lack of imposing effect. The elements are not wanting: there are good heights and ample dimensions, wealth of detail in some instances, solidity of material, and a certain amount of variety; but the clever handling, the boldness and spirit which please us in other architectural works whose qualifying adjective is "grand," are lacking in the present instance, and their loss is to be deplored. The poverty of the design nowhere expresses itself more prominently than upon the lower story, which seems to mourn its neglect, and envy the stories above; plain oblong apertures for windows, unrelieved save by a bead and stop chamfer, pierce the walls on this floor, arranged somewhat on the factory principle, and innocent of any thing like harmonious grouping, so often effective in a structure of this character. The ornamental carving seems to have been attracted in spots, and where introduced the display is lavish, almost prodigal. Special effort has been made to render the approaches to the building striking, and to enrich the arcades and entrances to an almost unlimited extent. This is seen at once in the crocketed arches, the elaborate lintels, the carved capitals and polished shafts of the columns, and the delicate patterns of diaper-work. The tympana of the arches are to be embellished; and already a fine bas-relief of the famous Charter Oak has been cut upon a tympanum over the east entrance; and between each arch are corbels with miniature columns, crowned with absurdly large caps. These are intended for the reception of statues. The provision for these marble gentlemen is ample, there being no less than twenty-six projecting corbels. The effect of Connecticut worthies thus distributed and standing each under his beehive-like canopy of marble, will doubtless be unique, and the scene will be a busy one. The major portion of the foliated work of the string-course and the capitals is cleverly done; the designs are good, and the execution is spirited. The models for this work or a part of it were furnished by the well-known New York sculptors, Messrs. Ellin & Co.; and the carving was executed on the site by foreign workmen. Critical eyes, not to say average good taste, cannot fail to notice a want of harmonious proportion in much of the carving, placed at a considerable height from the ground, particularly about the finials of the turrets, and also in those forming the termination for the pedestals of the balustrades. Why balustrades should be used at all and introduced at the bottom of the steep roofs, we do not attempt to explain. The ridges are crowned with a finely designed iron cresting, the full effect of which is only realized by climbing to its level, and then viewing it. The building is deserving of credit in one particular which is not unfrequently overlooked. It presents four façades nearly in keeping with each other; and while three of the number are more elaborate, still the remaining façade (that on the west) is not treated as though, being in the rear, it was of no great importance and consequently called for little or no design. It does not repeat the error made in the City Hall, Boston, for example, whose rear portion is but distantly related to the front and sides. In the present case some allowance should be made in favor of the fact that the rear of the Capitol will doubtless be seen by the majority of the people who visiting the building are attracted by the other elevations. In a large public work of this character, it certainly seems an unpardonable breach of professional etiquette not to intrust the supervision and superintendence to the architect; and the course of the authorities in this respect is open to criticism. If the plan of employing a second party to superintend the erection

of the building was adopted for the sake of economy, a very plain and homely lesson can be read in the fact that the entire structure, when completed, is now calculated to cost $2,500,000.

The dome is now being built; when finished it will stand some 260 feet high and be crowned by a symbolic figure in bronze. The diameter of the dome is nearly 60 feet. Whatever may be the æsthetic effect of this conspicuous feature externally, internally the vast piles of masonry which support it, and confront the visitor as he enters the north vestibule, are almost appalling; and if the numberless columns about the masonry and the lumbering proportions of the costly marble staircase are included in the same view, the scene will be enough to confuse Connecticut statesmen for years to come. Interior work is being pushed forward with an eye toward the possible occupation of the Senate Chamber and Representatives' Hall by the Legislature at the winter session in January next; and already McPherson of Boston is at work upon the wall decorations. The site of the Capitol is a fine one. The untrammelled nature of the ground, and its commanding elevation above the City Park, render it pre-eminently a good location for a public edifice; and its lofty dome, its towers, and the vast proportions of its marble walls set in a background of rich foliage, unite to attract the attention of the public, not only of the city, but that portion of the travelling public which passes through Hartford daily upon the different lines of railroads.

For several years past, strenuous efforts have been made by a society interested in the treatment of inebriety as a disease, to obtain from the Connecticut Legislature an appropriation of $25,000 to aid in the erection of an asylum. Thus far their efforts have been fruitless; but the initial step of the project has been already taken, and an eligible site purchased. It is about two miles south-west of this city, and is known as "Walnut Hill." Temporary quarters have been leased by the society, and treatment of patients will for the present be pursued in town.

Mr. George Keller has recently received a commission for a soldiers' monument to be built at Manchester, N. H. Mr. Keller's design was selected by the committee, from thirty drawings which were submitted in competition. The monument will probably be of granite, and when completed will cost $20,000.

CHETWOOD.

THE BURNING OF HALE'S FACTORY. — THE APPRENTICES' LIBRARY.

NEW YORK.

THE fire of the 3d inst., at Hale's piano-factory in this city, by which an undetermined loss of life and a destruction of a half million worth of property was brought about, is noteworthy as being the direct result of bad building. No building law, no device or forethought of architect or designer, can prevent the outbreak of a fire; but the merest tyro in construction should know, or a half moment's thought should convince any one, that a great brick shell eight stories high and 197′ x 26′ in plan, with windows in abundance from top to bottom, was sure to become, when fire had once gained a strong hold upon it, a veritable centre of destruction. The side walls were as thin as possible under the law; the floor-beams and roof were of wood, without a single transverse bulkhead wall, but with open stairways and hatchways which afforded every opportunity to the most rapid and unrestricted spread of the flames.

This factory has a history which might appear mysterious were it not so easily explained by a statement of the attempts which have been made to build with flimsy materials and slighted workmanship. It was begun in November, 1870, and pushed on until Dec. 15, when the roof having just been put on, the whole came down in a grand crash, destroying part of the adjoining property, and causing the death of four persons. Haste in building, poor mortar, and thin, insecure walls, were the reasons assigned. An inquest was called, and experts examined. The verdict declared the building to be built according to law, but stated that the law was defective, and recommended various changes looking to the gain of greater security through cross walls and bracing. Mr. Hale, having thus been declared a law-abiding citizen, rebuilt the factory according to the plans and specifications which had been so unluckily followed in the first attempt. The building managed to stand for six years, and then made another exhibit of the penny-wise, pound-foolish policy of cheap construction, in the conflagration which it caused on the 3d instant. The fire had hardly begun when the thin walls burst out, leaving an open space wherein the wind had full play, and sent the flames in every direction. It was the general opinion of all who looked at the high tinder-box, that had the walls been strong, they would have been a protection to the neighboring houses, and very likely have enabled the firemen to restrict the fire to the destruction of this single building. As it was, they gave way at once, and the fire spread right and left without hinderance. The roof proved any thing but fire-proof, igniting like so much paper, and scattering sparks far and wide, starting flames at various points in the neighborhood, and at a distance of several blocks, burning up the Gospel Tent. Egress from the building was extremely difficult, as the staircases and passage-ways were among the first parts of the building to succumb to the flames. In short, all the features of a building on which one would expect to place reliance in time of such emergency proved totally inadequate. The building was constructed not only so as to insure its own speedy and entire destruction in case of fire, but also so as to involve the largest possible number of contiguous houses. At the time the fire started the wind was very high, and continued so during the whole day; and, as the building was perfectly honeycombed with windows, all of which were open, there were continuous currents of air fanning the flames. Iron shutters, which, if closed, might have kept out the wind and smothered the fire in its early stages, were left open, and proved worse than useless. A large amount of inflammable material was stored in the building, and helped to feed and extend the conflagration. There seems to have been no water or other means of extinguishing a fire on the place.

Even while the flames were busy licking up the surrounding property, the Building Department officials were declaring that the factory included every thing it should have according to their notion of building. The original cost of the building was $37,000 in the days of high prices; John G. Prague being the architect, and Samuel Cochrane (since deceased) the builder. The walls were twenty, sixteen, and twelve inches thick, of common hard brick, covered by a flat roof.

The comments of the press upon the occurrence have been severe as they are merited. All unite in condemning the state of affairs under which such a structure could be placed in the centre of a city; and the fact that hundreds of just such foci of destruction exist in New York to-day no doubt added vigor to the comments of the writers. The *World*, for instance, says that,—

"It needs no showing that a city in which such a thing as this can happen, and happen repeatedly, whatever its pretensions may be, is not a civilized city. In cities which have proper building laws and enforce them, such a fire with such a result would be out of the question. The Parisians of the Commune tried for a week to burn Paris, with very small success. In New York, buildings and their inmates are consumed from time to time; and New Yorkers consider it a law of nature and necessity of things that buildings should burn up, and men with them. It is safe to say that there are not a hundred buildings of the 70,000 which constitute the city of New York that would conform to the requirements of the building law of Paris. An eight-story factory without so much as a fire-proof staircase would be impossible in Paris, or in any other city with a proper building regulation. Such a law would probably be unpopular, hard to pass and harder to enforce. But it behooves the classes most interested in such a law to work in the first place for its passage, and in the second for its enforcement. Nothing is more absurd than to suppose that a man has a right in a crowded city to build as he pleases. His bad building endangers all his neighbors and may endanger the whole city, and he does not even build badly at his own risk. He continues to keep just within the verge of a law loosely drawn and loosely enforced; and he shifts his pecuniary risk upon an insurance company. Almost always the builder of man-traps gets the underwriters to assume and distribute the risk he ought to bear alone. If fire-insurance were not known there can scarcely be a doubt that sounder construction would prevail. It behooves the underwriters themselves to rectify the mischief their existence causes. They can erect for themselves a standard much higher than that of the existing law, as high as that of Paris or of Vienna, and hold their customers strictly to it. The insurance companies themselves would gain by such a course, and the owners of sound buildings would gain, since the rate now charged would be lowered if none but "good lines" of buildings were taken. Then, whatever legislation and the Department of Buildings might do or omit doing, every man would carry on reckless building-operations at his own peril, and it would not be long before New York was, as New York is not now, more secure against great conflagrations than Constantinople."

About the only new thing is the work now going on under D. and J. Jardine, architects, in converting the old Robinson Hall on Sixteenth Street, into a house for the Apprentices' Library, at a cost of $15,000; the Society of Mechanics and Tradesmen having found their old quarters at Grand Street and Broadway, rather out of the line of their patrons' travel. The library-room proper will be 34′ x 102′, and 23 feet high. This will be lined with shelving, and also have projecting series of shelves twelve feet from either side; while in height three tiers will be arranged, giving in all accommodation for a hundred thousand volumes. Light will be gained from a central sky-light measuring 8′ x 72′. Below this hall is a schoolroom, twelve feet high. The front building is four stories high; the lower portion to be used for committee-rooms, special study-rooms, and a general meeting-hall, 49′ x 18′. Exteriorly the only change will be the insertion of a marble slab bearing the arms of the society; and then the society will disgrace the front of what is now an unpretentious brick building, by clapping on showy sheet-metal lintels over each window, and a commonplace, bulky cornice. These will of course be sanded, and must be considered as stone; and if the Society of Mechanics are satisfied, they no doubt will fail to understand why a good portion of the general public, who are afflicted with notions of propriety, honesty, and truth, in buildings as in other things, should find fault with this mendacious sheet-iron stone-work.

ST. JOHN NOTES.

THAT there has been a fire in St. John, that the phœnix is engaged in his usual occupation, and that he is ably seconded in his laudable efforts by a worthy following of his coadjutors, — the members of the architectural profession, — cannot be considered news; but a few notes of what is doing, and who is there, may be interesting. St. John boasted about a half-dozen knights of the

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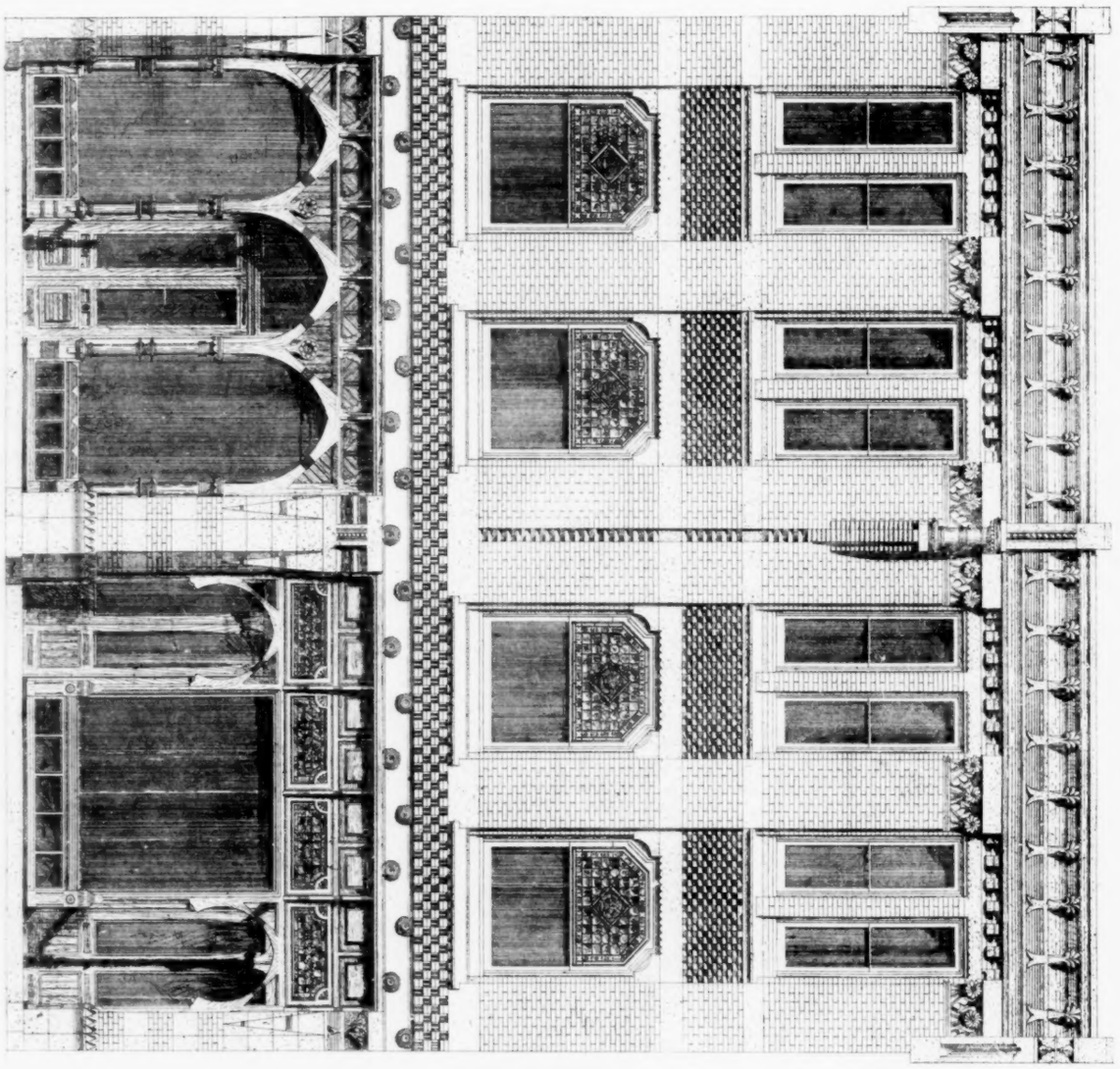
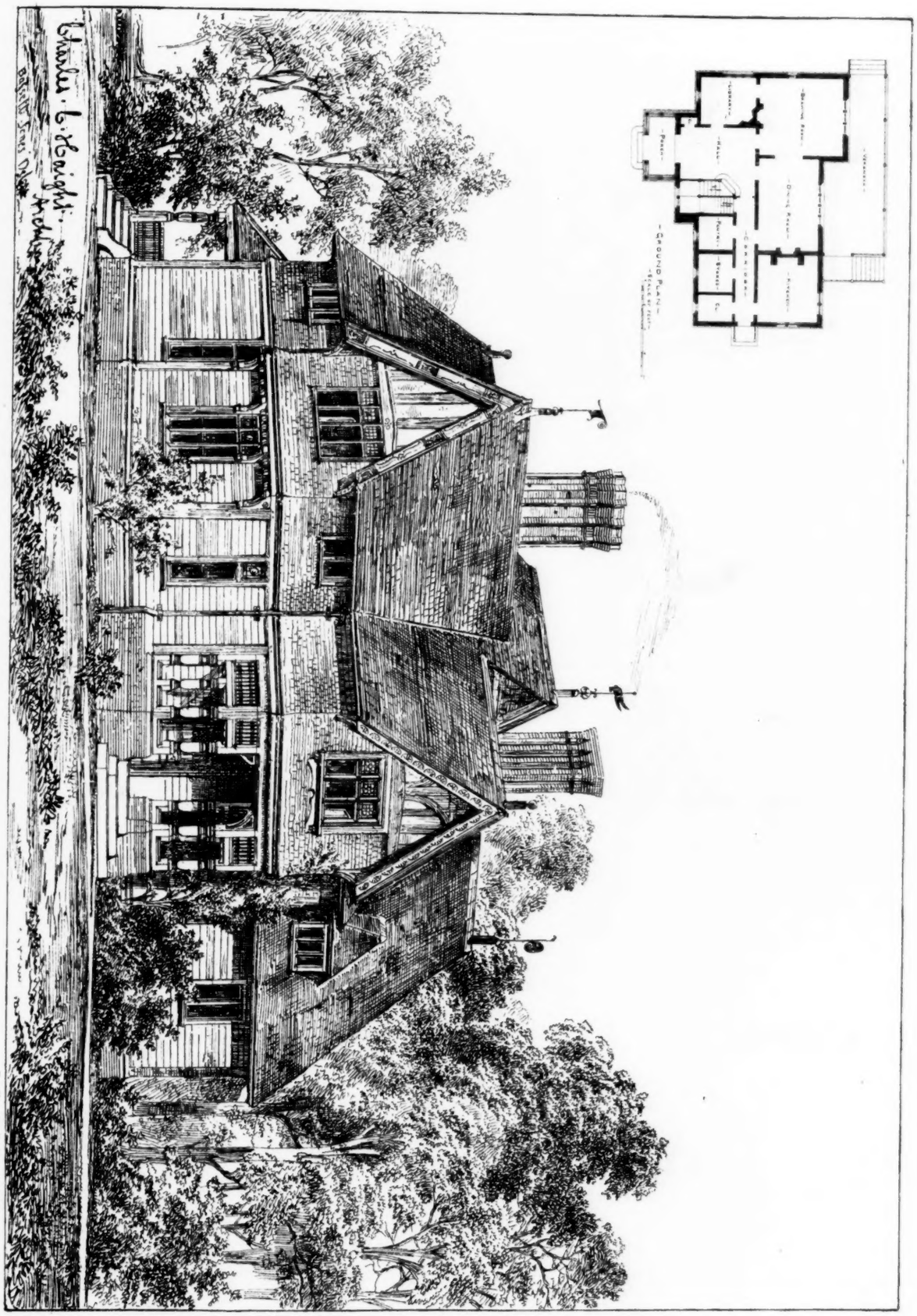
CHARLES GARNIER, ARCH.T

GRAND STAIRCASE OF THE NEW OPERA HOUSE, PARIS

STORES ON CHESTNUT ST. PHILADELPHIA.

MR. T. R. WILLIAMSON ARCHT.





DESIGN FOR A COTTAGE AT ORANGE, N.J.
MR. C. L. HAIGHT, ARCHT.

THE HELIOTYPE PRINTING CO. 620 DEVONSHIRE ST. BOSTON

T-square, previous to the memorable event of last June; but more than a score are now offering their services, and still they come.

Matthew Stead was the earliest practitioner in the city, having come from the "old country" some thirty or forty years ago. He is still in practice; and the fire has spared some very good and thoughtful work of his. His son is ably following in his footsteps. Messrs. Smith and Dunn, Messrs. McKean and Fairweather, and Frank Kain, about filled the list of ante-phœnix architects, all gentlemen who had been carrying on their business in an entirely professional and fraternal way. Mr. Dunn, of Smith and Dunn, is a native of St. John, but has been engaged in Boston and in Chicago heretofore. Mr. Smith a dozen years since was a student in Mr. Preston's office in Boston, and is also a St. John man.

The extraordinary opportunity, coupled with the depression of the building interests elsewhere, has brought a score or more of architects from other cities, who have certainly filled the architectural ranks to repletion. From Montreal there are Messrs. Hopkins and Wiley, and Mr. G. F. Cole; from New York, West and Anderson, F. C. Merry, and Mr. Babcock; from Boston, Starbuck and Vinal, John Stevens, and Bryant and Black; from Halifax, Dumaresq and Dewar; also, Mr. Bowdoin from Troy, Currier and Faxon, Messrs. Croff and Camp of Saratoga, and several others whose names have escaped me. So it will be seen that the Provinces *need* not lack for professional advice. It is perhaps unnecessary to add that the now historical "master workman" of the *Quarterly Review* has many representatives who prefer their claims on the building public, and who "don't need no plans," or can very readily make their own.

Messrs. Smith and Dunn, with a view to the establishment of fraternal feeling and a uniform scale of charges, caused circulars to be issued to all the architects, inviting them to meet at their office for that purpose, on a certain evening two or three weeks since. The result was a gathering of about twenty gentlemen, who chose Mr. Wiley as chairman. A second meeting was called a week later, and attended by nearly an equal number. A committee recommended a schedule of prices, almost identical with that of the American Institute, which was unanimously adopted, as was also the scheme for the formation of a permanent organization. The only item in the schedule differing from the American Institute charges was an intermediate one of four per cent on the cost of "finished stores and office buildings;" the rate of three per cent on unfinished warehouses remaining the same — a change, by the way, which would seem a just one for the Institute to adopt at its next convention. The formation of an architectural or professional club is also on the *tapis*, which will provide rooms for social intercourse, a reading-room, etc.; a very desirable move, as places of amusement or entertainment in St. John are painfully scarce.

Several competitions have taken place, conducted in the most primitive, and, in most cases, arbitrary and unsatisfactory manner. The usual method of obtaining drawings has been simply the insertion of a notice in the daily papers, that the committee, etc., "would receive plans" up to a certain date, without the slightest intimation as to any future system of rewards and punishments. It was reported that in one case the *plans* were scarcely noticed; but the elevations were held up, one after another, and the "prettiest" won the day. On another occasion, it was said that in an important church competition, an offer of full professional services at an extremely low percentage was the silver key that placed the church treasury at the architect's disposal. It is to be hoped the proposed society of architects of St. John may prove a remedy for such irregular and discouraging conduct of competitions, and that the advice of the society to parties intending to ask competitive work, as to the proper method of obtaining the best results, may be heeded. They really have the remedy in their own hands, if they make good use of their opportunity.

The most recent competition was that for Trinity Church, for which designs were asked in the above informal way. Eleven designs were submitted, from which four were selected for a second competition; whether upon the same basis of selection and remuneration has not, I believe, been determined. Withers of New York, and Dumaresq and Dewar were two of the elect. Who were the authors of the others I did not learn.

All the building since the fire, with hardly an exception, has thus far been of the most careless and shabby description. Hundreds of wooden buildings with balloon frames and shingled roofs are sprinkled broadcast over the burnt district of 240 acres; and a worthy alderman has argued in the public prints in favor of wooden buildings, on the ground that a "brick building in burning, generates at least twenty times as much heat as a wooden one." Perhaps his constituency may have unduly influenced his judgment; nevertheless a movement has been made by the city council looking toward the framing of a building law. The act has been formulated substantially on the Boston law, and has gone to the Provincial Government at Frederickton, now in session, for enactment, with good prospects of success, Alderman Maher being spoken of as the probable inspector.

Such a law properly executed would be the salvation of new St. John, and would dispose of most of the arguments against thinness and cheapness and lightness which have to be advanced and defended by the architects (most of them) in each recurring case.

W. G. P.

THE ILLUSTRATIONS.

THE GRAND STAIRCASE OF THE NEW OPERA HOUSE AT PARIS.

M. CHARLES GARNIER, architect of the New Opera House at Paris, before his labors were completed, in apologizing for the magnificent space occupied by the grand staircase, which is nearly equal to the whole area of the audience-room, and for the monumental pomp and luxury of its decoration, which is not surpassed by any modern work, drew an imaginative picture somewhat as follows of the scenic effect which he expected ultimately to realize: "The spectators grouped at the balconies, or leaning over to view the crowded company below ascending or descending the grand staircase, will give life and animation to the architecture. These, combined with the rich colors of draperies, marbles, paintings, and flowers, and illuminated by girandoles, candelabras, and chandeliers, will form a sumptuous and brilliant composition, recalling the characteristic effects of Veronese. The dazzling lights, the splendor of the toilettes, the gay and animated figures intermingling and saluting each other in ever-changing groups, will constitute the living picture of a fête in which, without attempting to analyze the part which the architecture of the place must play in this spectacle, the enjoyment of the public will unconsciously render homage to that great art so powerful in its effects upon the mind, and so great in its results."

The steps of this staircase are in white marble of Serravezza; its balustrades are composed of balusters in red antique marble resting on a base of green marble from Sweden, and supporting a rail of onyx. On the newel posts at the foot of the ramps of the main central flight are electrotype groups by M. Carrier-Belleuse supporting bouquets of lamps. On either side descend the stairs to the vestibules below. At the head of the principal flight on the first landing, between great bronze candelabra, is a central door giving access to the lower boxes, the parquette, and orchestra; this doorway is executed in rich marbles, and decorated with two bronze caryatides (Comedy and Tragedy), with draperies of yellow and green Swedish marble in the antique Roman fashion, sustaining a pediment which is surmounted by the arms of the city of Paris, flanked by two Cupids in white marble. This is the work of M. Jules Thomas. On either side the stairs divide and ascend to the level of the first circle of boxes.

The order which surrounds the staircase hall is composed of thirty polished monolithic columns of marble from the quarries of Sarrancolin, with bases and capitals in white marble from Saint-Béat, and pilasters of peach-blossom or violet Breccio. In the spandrels above are twelve medallions of yellow marble surrounded by the heads of children and other ornaments sculptured by M. Chabaud. The entablature is decorated with marbles from the different provinces of France. Above is a flat ceiling supported by four immense coves 49 feet by 17 feet, penetrated by arcades corresponding with the order below, and adorned with paintings by M. Pils.

The intercolumniations of the order, which, on the side towards the *foyers* on the other three sides, are open through their entire height, are elsewhere occupied by balconies corresponding with the five ranges of boxes in the audience-room. Of these, the lower project upon sculptured corbels; the balusters of these lower balconies are of fluor spar with bases of various marbles, and railing of Algerian onyx. On the second and third stages these balconies are of bronze. On the upper or fifth stage above the cornice the balconies are of Campanian marble, and stone from Saint-Ylie.

Our number for Dec. 9, 1876 (p. 395), contained, it may be remembered, a general description, with a plan, of this pompous structure. With this number we present a reproduction of the drawing of the grand staircase by M. Riquois from the atlas accompanying M. Garnier's interesting work on the New Opera, the last number of which, containing this plate, we have just received.

The corridor or vestibule to the *foyer*, which is behind the spectator in this view, has its ceiling inlaid with mosaic by workmen from Venice. The *foyer* itself is a luxurious hall in white and gold, of great height and surrounded by an order of twenty columns, the entablature of which is surmounted by twenty statues representing the qualities essential to the dramatic artist. The famous paintings of M. Baudry decorate the ceiling.

DESIGN FOR A COTTAGE AT ORANGE, N.J. MR. C. C. HAIGHT, ARCHITECT.

(Trinity Building, New York, N.Y.)

STORES ON CHESTNUT STREET, PHILADELPHIA, PENN. MR. T. R. WILLIAMSON, ARCHITECT.

(506 Walnut Street, Philadelphia, Penn.)

MONT SAINT-MICHEL, FRANCE. — Mont Saint-Michel on the coast of Brittany, which enjoys the honor of never having ceased to be French, has a history of almost unrivalled interest, which is equally absorbing, whether studied from the military, the ecclesiastical, or the architectural standpoint. It is of its architectural history that M. Edouard Corroyer, a French architect, treats in an important monograph on the Abbey of Mont Saint-Michel lately published.

PAPERS READ BEFORE THE BRITISH ASSOCIATION.

THE following are abstracts of some of the papers which were read in the different sections at the meeting of the British Association in Plymouth, which has just been concluded: —

PLYMOUTH BREAKWATER.

Mr. R. C. Townshend, on this subject, referred to the damage done to the western arm of the breakwater — the most vulnerable part of the whole structure — by a storm in January, 1867. Not only were large rough limestone blocks, varying from five to ten tons in weight, dislodged from the foreshore, but the masonry forming the granite band protecting the foot of the inner slope was upheaved and carried away for a considerable distance. The primary cause of the weakness was the subsidence of the foundation below the granite band, leaving large cavities open. It occurred to him that had the granite band been a few feet longer in the work, and the stones of greater weight, the damage done, amounting to 20,000*l.*, would not have been so excessive; and on his recommendation the Director of Works adopted a repair of a more massive character, which had realized the most sanguine anticipations. To show what heavy waves sometimes struck the work during the SSW. gale, he mentioned that eight years ago two concrete blocks weighing 24 tons each, and a limestone block 35 tons in weight, were capsized, and in one tide swept completely over the breakwater. Now, however, the whole of the structure was in excellent condition, and might not require heavy repairs for years to come.

INTERCEPTION OF RAINFALL IN SEWERS.

Mr. Baldwin Latham read a paper on this subject, remarking that the admission of large and uncertain volumes of rainfall into sewers at various periods produced considerable difficulties in many districts in which the purification of the sewage had to be effected. In the majority of towns the rainfall was admitted into the sewers, the excess of rainfall and sewage being discharged by storm-water overflows, to the great detriment of the streams which received it. The complete separation of rainfall from sewers had been advocated, but this would be attended with difficulty in crowded towns, as in times of rainfall the water flowing from the streets was found to be quite as impure as the sewage proper. The admission of rainfall into sewers necessitated an increase of capacity in the sewers, as, for example, in London two-thirds of the total capacity of the sewers was required for carrying away the moderate quantity of a quarter of an inch of rainfall in twenty-four hours. He had executed a complete system of sewerage in the borough of Longton and the contiguous district of the East Vale Local Board, the combined localities containing a population of 25,000. The Duke of Sutherland arranged to take the sewerage and use it for irrigating land. He planned a duplicate system of sewers, a connection being made between the rainfall sewers and the sewers proper. What was termed an "interceptor" was provided at the point of junction between the two systems, it consisting of a leaping weir so arranged that when there was a small quantity of water flowing down the rainfall sewers, and the liquid was as a natural consequence very polluted, it passed through the adjustable opening into the sewer proper. But in time of rainfall, when the volume and velocity of the stream in the rainfall sewers were increased, and the water was comparatively pure, it leaped over the sewer opening and passed to the natural streams of the district. He used twenty-two interceptors which cost 31*l.* each, and their employment had given perfect satisfaction to the authorities.

WATER-TANKS OF CEYLON.

Mr. B. F. Hartshorne read a paper in which he described the high civilization, together with the character and customs, of the ancient inhabitants. The paper went on to say that the great tanks remain as monuments of the enlightened despotisms of various kings, who raised the country in turn to a splendid height of prosperity. Some of them belong to periods long before the Christian era. One, called Kalawewa, was an inland sea, thirty miles in circumference, formed by damming up two rivers by means of an immense embankment twelve miles long; another, Padawiya, must have occupied a million of people for ten or fifteen years in its construction. Its *bund*, or embankment, is eleven miles in length, 70 feet high, and 160 feet thick at the base. The bed of the tank is now overgrown with a magnificent forest, and for miles around there is not a vestige of man. Its last restoration was effected by King Parakrama Bahu I.; and a stone obelisk on the spot records how he accomplished this work, "in the hope of obtaining the happiness of this as well as the next world." King Maha Sen, who reigned about 275 A. D., seems to have done most in the formation of these vast tanks. It is calculated that one which he formed, named Kanthelai, could only be constructed at the present day at a cost of upwards of one million sterling. Under the vigorous and energetic government of the Right Hon. Sir William Gregory, much has been effected in the way of the restorations of many of these tanks, and with the happiest results. The neglect and apathy of successive generations both of rulers and of the people have been the main cause of the abandonment and desolation of large tracts of land, whose fertility was formerly indicated by such names as "The Golden Plains," or "The Granary of the Kings." Foreign and internal warfare no doubt caused the destruction of some irrigation works; and their continued disrepair has been mainly owing to the disregard of ancient customs, and to the abolition of the system of compulsory labor.

EDDYSTONE LIGHT-HOUSE.

Mr. Isaac Douglass, of the Trinity House, in the course of an interesting paper on this subject, surprised his hearers by announcing that Smeaton's great work was not destined to exist much longer. Owing to very considerable tremor which occurred with each wave-stroke during heavy storms from the westward, fears have been entertained for the safety of the structure, particularly as sea water had frequently been driven through the joints of the masonry. The upper part was strengthened in 1839 and 1865 with internal wrought iron ties extending from the lantern floor downwards to the solid portion of the tower. On the last occasion he found that the chief mischief arose from the upward stroke of the sea at the cornice; but repairs were effected, and further leakage prevented. The tower was still sound, but unfortunately the gneiss rock on which the light-house was built had been seriously undermined and weakened by the sea. This appeared to be chiefly due to the incessant straining of the laminated rock by the heavy sea-strokes on the tower. It had therefore been determined to erect another light-house of larger dimensions, for which a good foundation had been discovered about 120 feet off. The elevation of the light for a range of 19 nautical miles was very desirable, so that it might be extended more toward the Channel Rock, and made to overlap the range of the neighboring Lizard lights to the westward. Unfortunately the sea rose during stormy weather considerably above the top of the lantern, thus often eclipsing the light and altering its distinctive character. This was a matter of much greater importance in the present day than it was at the date of the erection of the structure, from the enormous increase in the number of shipping, and the additional light-houses which had been established, each having a distinctive character. The power of a light in so important a position ought to be raised to the first class, but the capacity of the present tower was insufficient for this as well as for the provision of a first-class fog signal. The average annual cost of maintaining the light-house was about 585*l.* In conclusion, he could not help expressing a hope that if Smeaton's noble structure had to be taken down, as doubtless it would be after the erection of the proposed new light-house, the nation would consider it as worthy of a site on English soil as Cleopatra's Needle. — *The Architect.*

ENGINE-HOUSE OF THE PROVIDENCE WATER-WORKS.

PROVIDENCE, Sept. 5, 1877.

TO THE EDITOR OF THE AMERICAN ARCHITECT AND BUILDING NEWS.

THE item in the last number of your journal, in regard to the settlement of the engine and engine-house at the Pettaconset pumping station of the Providence water-works, has been floating around in the newspapers with no foundation in fact upon which to base it.

The building is built over a bed of quicksand under the central portion, and upon the solid ground at each end. In the centre of the building is a stand-pipe nearly two hundred feet high, and eight feet in diameter, with space for four enormous Cornish engines. Only one engine is at present placed in the building.

From the above statement, it will be observed that the weight is very unequally distributed, and that the greatest weight has to be carried by the most insecure portion of the foundation.

The stand-pipe and pump end of the engine, as well as the central portion of the building, rest upon a platform of hard-pine timber four feet thick; and so successfully have the engineering difficulties been met, that there is no visible evidence, such as cracks in the walls, of any unequal settlement; and I am informed that levels have been taken which show that the building stands true and level.

X.

THE MASONS OF PARIS.

As is well known, the art of masonry is very ancient, but it was only in the reign of Louis IX., in the thirteenth century, that the masons in France formed an important corporation. Thanks to the perfect understanding that existed among the different members, the art of masonry made rapid progress; and in the present day it may be said that France occupies, in that respect, the first rank among all countries.

Among the masons there is the *limousin*, who works at the foundations; the *compagnon*, who does the light work; and the *aide-maçon*, who is a simple hod-man. The departments, or as we should say, the counties, which furnish the largest number of masons, are those of the Creuze and the Corrèze. No less than 60,000 workmen come each year to Paris to exercise their profession; many, after remaining during the summer in the capital, return home for the three winter months. These emigrations are chiefly caused by the sterile and unproductive nature of the soil of the country. As for the slaters, their origin is much more modern. We learn that King Dagobert covered the cathedral of

St. Denis with sheets of lead, but this was an unusual occurrence; tiles and slates have been introduced comparatively recently.

In Paris, the home of the masons is the Rue de l'Hôtel de Ville, formerly known as the Rue de la Mortellerie in consequence of the ravages which the cholera produced there in 1832. This street offers to the lovers of the picturesque the most strange aspect; from end to end the Rue de l'Hôtel de Ville is peopled by workmen known under the various names of *limousins*, masons, stone-cutters, and dressers; they are true workmen, who think only of their work, without caring about the *chefs-d'œuvre* in the building of which they play so important a part. They leave their villages to work in the great city, under directions; and when the task is completed, they return home, little thinking of what they have built. To such a pitch is this indifference to all else carried, that often in their old age they express a hope that they may not die before having seen Paris.

These masons, almost all coming from the same part of the country, seek to keep together. The lodgings inhabited by these workmen are formed of rooms in which sleep together *coteries* (according to the technical expression used by them), composed of six, eight, twelve, or even twenty-five workmen. Each *coterie* comes from the same village. They leave home for work at five in the morning, each bearing with him a large hunk of coarse bread, in the middle of which has been inserted a red herring or a piece of *merluche*, or salt cod. This meal, washed down by a glass of water, and taken while at work, at an hour usually marked by several laths struck together, serves till the evening, when the gang returns home at about seven, and finds laid on a long table knives and forks equivalent to the number of lodgers. Soon a large bowl is brought to each, filled to the edge with a thick fat soup, exhaling a really appetizing odor, and in the middle of which is a slice of beef surmounted by a large carrot. Each lodger takes his place, and in a short time the whole is consumed, the general harmony only from time to time disturbed when some one of the party is noticed to have a larger carrot than his neighbor; immediately a shower of witty and stinging remarks are launched, in which the names of the lucky lodger and the cook are mingled intimately.

After the meal, the workmen, who are as a rule excessively sober, go and pass on the neighboring quay the hour or so which separates them from the time of retiring to rest. They may then be seen sitting on the parapet, silent, and not smoking, which may appear strange, but which is in reality true. This family of workmen is as honest in its outward form as it is upright in conduct, and it is very rare that a passer-by has ever had to complain of any insult or inconvenience.

Let it be remarked that after the evening meal, as after the morning repast, the mason only drinks a glass of water. He has then spent in his day eighty centimes (about 7½*d.*) for his food, and forty centimes for his bed; in all, one franc, twenty centimes (not a shilling); and as he gains five francs, fifty centimes, — that is, something more than 4*s.*, — he realizes each day an important economy. Let it be remarked, however, that the mason does not dress himself; he only lives in the city during the fine weather, and simply needs for his work a blouse, a pair of corduroy trousers, and a large felt hat, which he brings from his home, but which is rarely worn.

The rooms of which we have spoken are almost all uniform; the beds are composed of a hard mattress and sheets of coarse linen, but always clean and well kept. A square box in which the workman keeps his tools, his trowel, his square, his plumb, and sometimes also his letters from home, is placed under the bed. Let it not be imagined that the dust that covers it is the dust of oblivion: respect it, it is the dust of the owner's profession.

The old workmen are generally married in the country, where the wife, who tills the piece of land, increasing in size each year, brings up her children in the paths of honesty and labor, and thus forms the masons of the future. On returning to Paris, like the swallows, with the fine weather, the mason transports his habits, which he preserves pure and unsullied from alloy with the civilization of the capital. He puts by, and of the pay each fortnight he spends alone what is necessary; but it is not the box which will receive his economies: the money will be placed by the side of the trowel which gained it, in the hands of the *dean* of the room, often a municipal councillor in the village, and who thus preserves amidst his brethren a real authority.

At the end of the campaign, that is to say, five months later, each one makes up his bundle to return home; and then each mason may be seen with a knapsack on his back, a large pair of shoes outside, and in his hand a huge red umbrella. On the arrival near home, the caravan separates; each rejoins his family, and hangs up his umbrella as a trophy and a recollection. As for the money so painfully gained, it is consecrated to the acquisition of a piece of land, the dearest investment which the Frenchman can make. On the Sunday the mason dons his suitable costume, and, having attended mass, wanders by the river; rarely, if ever, giving himself up to any costly pleasure.

Such is the life of the Parisian mason. How different to that of the London workman, and how little the two have in common, with the exception of hard work! — *The Builder.*

DRYING PLASTERING IN DENMARK.

ACCORDING to the *Grossherzoglich Hessisches Gewerbeblatt*, a Danish architect, Mr. Kruse of Copenhagen, has recently erected a building, and prepared it for occupancy, in forty days; the walls being dried in three days. A calculation showed that from each story there was a minimum of four thousand gallons of water to be evaporated. To do this, a great increase of temperature was necessary, and coke-stoves were placed in the cellar at the base of every chimney. One flue, probably, served for all stories. The chimneys were then closed above the roof, and a passage allowed the dense smoke by cutting openings into the flues six inches underneath the ceiling of the first story. An escape was then allowed on the level of the floor; and the rooms thus filled with currents of smoke and gases were quickly dried. This process was repeated floor by floor, the openings being successively broken out and walled up. The temperature varied from ninety-five to one hundred and twenty degrees Fahrenheit, and was, of course, lowest at the floor-level. The ventilation was so great, that the air, or rather the smoke, in the rooms, was totally changed from five to six times an hour. Something less than nineteen tons of coke were needed for a story, though we are not informed for how many rooms. A single workman was alone employed to attend the firing. It is also stated that the wood-work remained unharmed, there being no shrinkage noticeable in the doors, windows, etc. When dry, it appeared that the wall-plaster had attained an exceptional hardness, owing, no doubt, to the great quantity of carbonic-acid gas, produced by the imperfect combustion, which had changed the caustic lime into carbonate of lime. So says the report. It is quite customary to burn charcoal in newly-plastered houses for the sake of the gas; but there are few attempts of so great a magnitude as this on record. It seems strange that three days of such heat, and the evaporation of such quantities of water, should not have caused the wood-work to shrink or check, as it might reasonably have been expected to crack the walls. Plaster thus rapidly dried, and capable of absorbing little or no water, must have increased the labor of the kalsominer, paper-hanger, or frescoer: the carbonic-acid gas which filled the house naturally rendered superintendence impossible; and it is to be supposed that walls, ceilings, and floors were blackened by the smoke. But these are minor considerations: the great objection is, that the plaster was probably only hardened on the surface. It is a well-known fact that mortar in any form does not reach its usual firmness when dried in the heat of summer even. It seems as though the presence of water were necessary to aid the combination of lime and carbon. One of the best authorities on the subject, Vicat (*Recherches sur la Chaux*) goes so far as to assert that mortars lose four-fifths of their strength if dried too rapidly. He commends the custom of the masons of Northern Italy, who, in constructions of importance, water the masonry during the summer months to guard against this danger. It is an old saying, that lime at a hundred years is but a child; and such precocious forcing at birth does not appear conducive to long life.

NOTES AND CLIPPINGS.

AQUARIUM AT CINCINNATI. — Mr. James W. McLaughlin has prepared plans for the new aquarium. It is to be a stone building T-shaped in plan, the body measuring 48′ x 136′ and the head 48′ x 96′. The aquarium will be in the basement, and will measure 60′ x 150′ with a hallway for visitors, 24′ wide. Along the sides will be the fish tanks, sixteen large ones and about a dozen small ones, together with a seal pond and fountain. The visitors' hall will be kept dark. Light will be admitted from above at an angle of 60′, at the outer sides of the tanks, so as to place the fish between spectators and the light. This is an idea carried out with great success in Germany. Artificial salt water from a tried recipe will be prepared, better, it is said, for the purpose than natural sea-water. It is free from all dead animal substances, injurious to the health and life of fishes, as is shown in the shipment of them in tanks filled with it. The artificial water is in successful use at the Berlin Aquarium. It is proposed to aërate it, either by constantly pumping in air through small pipes, or by drawing it off into a large tank, pumping it back again, and keeping it constantly flowing through the series of fish-tanks. On the ground floor will be, in front, a restaurant (48′ x 96′), back of it a music-stand, and back of that a winter garden or palm-house (48′ x 108′) similar to one in Frankfort-on-the-Main. At the other end of the hall will be three aviaries at the sides, and a row of reptile cages around an opening above the seal pond. On the second floor will be a ball-room, 48′ x 96′, and adjoining it a promenade, looking down upon the winter garden.

THE INTER-OCEANIC CANAL. — The scheme of M. de Puydt, which has been adopted by a society styling itself the "*Société Internationale du Canal Colombien*," looks to a canal without lock or tunnel. On the Atlantic side, the canal would begin at Puerto Escondido, one hundred and forty miles south-east of Panama. The highest level to be passed is only forty-six mètres above the level of the sea. The canal, which would itself be about fifty-four miles long, would eventually join the River Tuyra, about forty miles from its mouth. The striking peculiarity of the scheme is the absence of locks, though the canal itself would not have the same level as the ocean, but would have a reservoir somewhere on the River Puero, where the water from the higher regions would be collected and flow down gentle slopes on either side to the Atlantic and Pacific Oceans!

FIRES IN CHICAGO. — The following is the summary of fires for the month of August: alarms, 44; "stills," 8. Class of buildings: frame, 26; brick, 7. Occupation: dwellings, 14; barns, 8; saloons, 4; coal and wood-sheds, 2; vacant buildings, 3; and one each, hotel, grocery, ironworkers, woodworkers, church, dry-kiln, meat-market, tenement, roofing-shop, railroad-car, boarding-house, drug-store, and albumen-factory. Origin: due to mischievousness, 4; maliciousness, 5; defective flues and chimneys, 5; kerosene-lamp, 5; spark falling on shingle roof, 2; spark from locomotive blown into bedroom-window, 1; smoking, 4; gross carelessness, 4; boiling chemicals, 1; lightning, 1; hot ashes, 1; shavings stored in closet for kindling, 3; overheated cookstove, 1; tar-kettle, 1; constable's custodian, 1; incendiary, 5; and false alarms, 8. Total, 52. Loss, $17,800; loss covered by insurance, $12,050; total insurance involved, $85,000.

FIRES IN NEW YORK. — The monthly report of Fire Marshal Sheldon shows that during the month of August there were 100 fires, involving a total estimated loss of $17,135, of which $5,030 was on buildings, $12,105 on stock; $1,700 uninsured loss on buildings and contents. During the month of August, 1876, there were 89 fires, resulting in a loss of $363,405, the average loss per fire being $4,083.

THE LATE EMIGRATION OF MECHANICS. — The St. Louis *Republican* states that Mr. Newton Crane, U. S. consul at Manchester, England, has notified the Treasury Department that the men who have arrived from America have been grievously deceived, and can neither get the wages they expected nor find work at lower wages.

TRUSS BRIDGE. — The channel-span of the bridge over the Ohio River at Cincinnati, built by the Keystone Bridge Company of Pittsburg, for the Cincinnati Southern Railway Company, has just been swung clear of the false works. This is said to be the largest span (520 feet) of truss-bridge in the world. The upper chord is 185 feet above ordinary water, and weighs about 1,300 tons.

FROM NEW ORLEANS TO THE SEA. — It is proposed to dig a ship canal between New Orleans and Barataria Bay, — an estuary of the sea that penetrates far into the land on the south coast of Louisiana. The distance from New Orleans to the Gulf of Mexico by this route would be only fifty-eight miles. The cost of digging the canal, it is estimated, would be $5,000,000. Neither Congressional nor State aid is asked: the advocates of the canal solely ask Congress to grant them the right to use the tidal waters of Barataria Bay.

BUILDING ASSOCIATIONS IN TENNESSEE. — Two and a half million dollars, it is said, have been expended in building operations in Memphis, Tenn., in the past two years. Building associations afforded much assistance, two hundred buildings having been erected by loans from them, at an average cost of $2,156 per house.

THE FRENCH EXHIBITION. — Work upon the main buildings has reached such a stage, that on the 10th inst. foreign architects and builders were admitted to begin upon the buildings for their respective countries.

THE FALL OF A MOUNTAIN IN SAVOY. — An interesting account of the recent falling of a mountain in Tarentaise, Savoy, causing disaster to two flourishing villages, has been communicated to the *Courrier des Alpes*, by M. Bérard. The phenomenon has been incorrectly reported as instantaneous and the destructive effect complete, whereas the case is that of a mountain which for twenty days, without cessation, has been dismembering itself and literally falling, night and day, into the valley below, filling it with piled-up blocks of stone, extinguishing all sounds by its incessant thunder, and covering the distant horizon with a thick cloud of yellowish dust. The entire mass comprised in the slope forms a mutilated cone 200 mètres broad at the top, and 600 at the base (the slope being about 50 degrees); this is composed of hard schist lying close together, but no longer united; and it is united to the body of the mountain only by a vertical mass of 40 or 50 mètres thick, which is already fissured and shaken. Periods of repose occur, lasting only a few seconds, or a minute at most; then the movement recommences and continues about 500 hours. Blocks of 40 cubic mètres become displaced with no apparent cause, traverse the 1,800 mètres of descent in thirty seconds, leaping 400 or 500 mètres at a time, and finally get dashed to pieces in the bed of the torrent, or launch their shattered fragments into the opposite forest, mowing down gigantic pines as if they were so many thistles. One such block was seen to strike a fine fir-tree before reaching the bridge between the villages; the tree was not simply broken or overthrown, but was crushed to dust (*volatilisé*); trunk and branches disappeared in the air like a burning match. Rocks are hurled together and broken into fragments that are thrown across the valley like swallows in a whirlwind; then follow showers of smaller fragments, and one hears the whistling sound of thousands of pebbles as they pass. M. Bérard reached the edge of the rock (2,460 mètres high) on one of the sides of the falling cone, and ventured along it, obtaining a good view of the "terrifying" spectacle. He re-affirms his conviction that the phenomenon is inexplicable by any of the usual reasons that account for Alpine disturbances, such as penetration of water or melting of snows, or inferior strata in motion; nor does the declivity of the slope explain it. His hypothesis is that some geological force is at work, of which the complex resultant acts obliquely to the axis of the mountain, and almost parallel to its sides. — *Nature.*

APPROXIMATE DATA CONCERNING WATER. — At 62°, the standard temperature of water, a gallon of water weighs about 62 lbs., and can be contained in a measure one foot square, and nearly two inches deep, or one whose diameter is one foot, and whose depth is about 2½ inches. A given volume of water in cubic inches may be converted into gallons by multiplying by .00036. A ton of water contains 224 gallons, or 35.9 cubic feet.

THE FARNESINA PALACE AT ROME. — A correspondent of The *Pall Mall Gazette* states that the Farnesina Palace, so well known to all visitors to Rome for the story of Cupid and Psyche as told in fresco by Raphael and his disciples, is in great danger of collapse, owing to the works going on for the improvement of the channel of the Tiber. The commission appointed immediately after the great flood of 1870 to devise means of preventing the recurrence of similar disasters has suggested the widening of the bed of the river by cutting off corners wherever practicable, and giving the stream a freer course. The Farnesina garden, as forming a curve in the river, besides being open ground, was pitched upon at once to be removed. The Duke of Ripalta, to whom the property belongs, applied to the Academy of St. Luke, the great authority on all art questions. The gist of the report agreed to by the Academy is that after careful examination of the palace walls and the soil on which they stand, the deputation believe that the digging of foundations for the river-wall will, by producing strong under-currents, cause the water to wash under, or at least filter through to the foundations of the palace, and that the walls would then sink or crack and the fresco drop off; that, unless the greatest care and attention are bestowed on the work, the paintings will be not only damaged, but irretrievably ruined, and that such care is not now taken.

EXHIBITIONS. — The first exhibition of apparatus for heating and ventilating recently held in Cassel, at which almost every civilized nation was represented, has proved a decided success. During this month a large collection of objects of modern ecclesiastical art will be exhibited in Würzburg. It will embrace architectural designs and models, works of painting and sculpture, the creations of the organ-builder, bell-caster, cabinet-maker, embroiderer, etc., so far as they serve the interests of the church.

THE LEVEL OF THE MEDITERRANEAN. — The engineers of Marseilles have, it is said, discovered that since the opening of the Suez Canal, the level of the Medeterranean has sunk three and one-quarter inches.

ENDOSMOSIS IN BUILDING. — Experiments by Profs. Märker and Schultze show that air and gases pass through the walls of buildings with wonderful facility. All that is necessary to promote the passage is a difference of temperature of ten degrees between the inside and outside air. The figures given are as follows, per hour, for each square yard of wall surface: through sandstone, 4.7 cubic feet; through quarried limestone, 6.5; through brick, 7.9; through turfy limestone, 10.1. This fact of the penetration and flow of gases through stone has an important bearing on the construction of wholesome residences. Most people are under the impression that if a cellar is lined with Portland cement, the dampness and malaria of the earth beneath will be shut off. If not in some way prevented, earth vapors pass upward into the building; and that part of the process is usually hastened in the winter months by a furnace in the cellar. Doubtless many malarial diseases, such as typhoid fever and diphtheria, may thus be propagated in cities, especially where the building sites are imperfectly drained, or are "made ground." The experiments referred to are an additional proof that a Portland cement lining will not cut off the malarious gases, as indeed might also be inferred from its porous character. The only effective barrier against foul air and dampness must be some substance which is not permeable. Probably this result might be attained by means of a layer of asphalt or bitumen, if it were evenly spread, and weighted so as to keep in place. In view of the estimate that half the diseases of mankind are preventible, it is not too much to hope that modern sanitary improvements may largely reduce the death-rate in cities. With many residences the improvement needs to begin at the bottom.

THE RAIN-TREE. — The Consul of the United States of Columbia in the Department of Loreto (Peru) has written from Yurimaguas to President Prado, informing him that in the woods adjacent to the city of Moyobamba exists a tree called by the natives Tamia-caspi (rain-tree), which possesses some remarkable qualities. It is a tree of about 15 mètres (about 50 feet) high when at maturity, and of about one mètre in diameter at the base, and has the property of absorbing an immense quantity of humidity from the atmosphere, which it concentrates, and subsequently pours forth from its leaves and branches in a shower, and in such abundance that in many cases the ground in its neighborhood is converted into a perfect bog. It possesses this curious property in its greatest degree in the summer, precisely when the rivers are at their lowest and water most scarce; and the writer proposes that it should be planted in the more arid regions of Peru, for the benefit of agriculturists.

HYDRAULIC CEMENTS. — A bed of fine hydraulic clay, similar to the beds found near the Thames, England, has been discovered near Austin, Texas. It is proposed to work it for the purpose of making cement.

EXCAVATIONS IN A ROMAN CAMP. — *Galignani's Messenger* of July 25 says: "Some excavations for antiquarian purposes are at present being made in the old Roman camp of Marlès, near Lançon (Bouches-du-Rhone), which contains some cisterns closed from time immemorial. Already a fine marble statue of Jupiter and an iron lamp with four sockets have been discovered. The intrenchments cover a space enclosed by lines of about 3,500 mètres in length, flanked by towers at ten paces apart. The walls are in ruins, and have been cut down to the level of the soil within the enclosure, but on the outside they are six mètres high, and follow the crest of the hill."

MICA. — A large order has been received for plates of mica to go to China. The Chinese use these plates, which are about seven inches square, for idolatrous purposes. They paint upon them the likenesses of their divinities, and reverently adore them. These particular ones are to be used for household decoration and devotion.